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10/532,550	08/17/2005	Norimasa Ishii	16169.6	3823

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EXAMINER

FALASCO, LOUIS V

ART UNIT

PAPER NUMBER

1773

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/532,550

Applicant(s)

ISHII ET AL.

Examiner

Louis Falasco

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                     |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                         | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/22;8/01/05</u> | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Papers Received*

1. The Information Disclosure Statements filed 04/22/05 and 08/12/05 is acknowledged.
2. The Amendment, Election and Remarks filed 12/27/06 are acknowledged.

### *Claims*

3. The claims are: 1 to 15.

### *Election/Restriction of Invention*

4. Claims 14 and 15 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12/27/06.

The claims under consideration are: 1 to 13.

### *Statutory Basis*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

### *Rejections*

5. Claims 1 to 13 are rejected under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Hironao et al** (JA 2002-032909).

**Hironao et al** teaches the instant claimed glass disc substrate for magnetic recording media. **Hironao et al** discloses a glass disc substrate that includes texture ridges along concentric circles {DD:[0048]}. These textures have a width of 200nm {DD:[0011-Config 3], [0053]; M:[0053]} and a height of 200nm {DD:[0018]}. The textures also have a roughness ratio of 1.0 {DD:[0035], [0043 - further at Table 1]}.

Though a point and 10  $\mu\text{m}^2$  area have not been measured, it would reasonably be expected that **Hironao et al** would have taken measurements. In **Hironao et al** the same measurements were taken.

width ? in [0053]

roughness would reasonably be expected as in the  $10\ \mu\text{m}^2$  since **Hironao et al** measures width, height and roughness **Hironao et al** by the same *Atomic Force Microscope* field {DD:[0037], [0051]; M:[0037]}. These same microscope measurements would reasonably be expected to encompass a  $10\ \mu\text{m}^2$  *Atomic Force Microscope* standard area.

As regard texture the **width** in claims 2, 3 and claims 9, 10 see **Hironao et al** {DD:[0011], [0018], [0076-77]}. **Hironao et al** also teaches this is routinely optimized to the requirements in the art {M:[0053]}.

As regard texture **height** in claim 3 and claims 9, 10 and similarly height  $R_v$  in claim 11 see **Hironao et al** {DD:[0018]}.

As regard texture in claim 8 and height  $R_v$  in claim 11 as maximum high variations from average roughness heights see **Hironao et al** {DD:[0018]; M:[0044]}.

As regard the **Bearing Ratio** in claims 4 through 7, and superposed texture irregularities on the textures of claims 9 and 10: these ratios and irregular extent have not been measured. However, these variations and irregularities would reasonably be assumed to be inherent characteristics of the **Hironao et al** substrate given that the instant substrate is produced by the same process steps and using the same components instantly used in attaining the ratios and textures. For example cf instant examples 1, 7, 11 and 18 with **Hironao et al** product produced by diamond abrading and etching - **Hironao et al** recognizes and takes measures to limit texture defects causing signal noise and turbulence {DD:[0031], [0050], [0054]; M:[0013], [0020], [0023], [0050]}.

As regard the claim 12 limitation of coercivity  $H_v/H_c$ : see **Hironao et al** {DD[0016-17], MM[0011], [0016-17]}.  $H_v$  and  $H_c$ , are merely characteristics of the textures formed in the **Hironao et al** process {DD:[0011]}.

As regard the claim 13 texture ratio,  $R_{\max}/R_a \leq 5$ ) see **Hironao et al** {DD:[0029]; M[0021], [0029], [0035], [0044 - also illustrated at Table 1]}.

Alternate to anticipation, discovering or merely observing favorable texture ranges within the **Hironao et al** substrates would have been at least *prima facie* obvious to the ordinary skill worker in the art. It would only require routine optimization to discover, or merely observe, the extent of superposed textures (e.g., imperfections, burrs, etc.) for reducing turbulence and improving S/N tolerable {DD:[0015]}. General conditions for the substrate textures were known in the art as evident from **Hironao et al**. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 180) ); *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235.

6. Claims 1 to 13 are rejected under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Saito et al** (US 2002/0127432).

**Saito et al** teaches a disc glass substrate for a magnetic recording medium as encompassed by these claims. **Saito et al** teaches a disc glass substrate including ridge textures along concentric circles {¶ [0035,36]}. The textures have a **width** inside the instant 10-200nm at disc 'plane' {¶ [0032], [0076], [0077]}. The textures have a **height** 2-10nm {¶ [0028, 0029, 0067] } and textures of the instant  $R_{\max}/R_a \leq 15$  (here corresponding to  $R_{\max}/R_a = 3-12\text{nm} / .5-1.0\text{nm} \leq 15$  {¶ [0027], [0030]}).

Though a *reference* and  $10 \mu\text{m}^2$  range is not explicitly stated in **Saito et al**, these reasonably appear inherent and not effecting the substrate itself, in the absence of evidence to the contrary. The **Saito et al** measurements are with the same *Atomic Force Microscope* as applicants {¶ [0030], [0069]} to the same *nano* degree and would reasonably be expected to encompass the same sizes.

As regard the textures the **width** in claims 2, 3: 10-20nm; claim 9, 10: 0.1-20nm; claim 10: 1-5nm - see {¶ [0032], [0076-77]}.

As regard the textures have the **height** in claims 3: 2-5nm; claim 9, 10: 0.1-1nm; claim 10: 3-8nm; claim 11: maximum valley depth  $\leq 10\text{nm}$  - see {¶ [0028], [0029], [0067]}.

As regard *Bearing Ratio* in claims 4 through 7 and superposed textures of claims 9 and 10: these ratios and irregularities on the textures have not been measured in **Saito et al**. However, the relative amounts and irregularities, in addition to other substrate properties (e.g.  $R_{\text{max}}/R_a$ , etc.) would be inherent properties resulting from a process. The instant article is produced by the same process steps using the same components as **Saito et al** - this is evident by comparing instant example 9, producing the claimed article, with the **Saito et al** process {¶ [0058], [0059]}.

As regard the claim 8 ratio  $H/D \leq 2$  maximum high variations from average roughness heights - see {¶ [0030]}.

As regard the claim 13,  $R_{\text{max}}/R_a \leq 5$  - see {¶ [0027]}.

As regard the claim 12 coercivity  $H_v/H_c$ : this is a characteristic of substrate textures, as such would have merely been an inherent property of textures taught by **Saito et al** - see {¶ [0007]}.

Alternate to anticipation by **Saito et al**, optimizing the extent of textures or merely observing prior art texture ranges would, at most involve routine optimization for one of ordinary skill in the art to the extent of avoiding head crashes {¶ [0030]} or observation of the prior art substrate as general conditions for the product were known in **Saito et al**. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 180); *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235.

7. Claims 1 to 13 are rejected under 35 U.S.C. 102 (a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Saito et al** (US 2003/0164005).

**Saito et al** teaches a disc glass substrate for a magnetic recording medium including ridge textures along concentric circles around the disc substrate at Fig. 2. **Saito et al** teaches the textures have track widths between 10-200nm {¶ [0099], [0108]}. **Saito et al** also teaches heights between 2-10nm {Fig. 5 and ¶ [0054], [0055]}. The textures have a ratio  $R_{max}/R_a \leq 15$  {¶ [0009], [0053], [0092], [0093], [0045], [0037]}.

A point and  $10 \mu m^2$  range has been not recited in **Saito et al**. However, **Saito et al** measures roughness using the same *Atomic Force Microscope* field to the same, *nano* degree as instantly claimed {¶ [0053], [0069]}. This would reasonably be expected to provide the same textures inherent in measuring roughness from the surface.

As regard the width in claims 2, 3: 10-20nm; claim 9: 0.1-20nm; claim 10: 1-5nm see {¶ [0099], [0108]}.



As regard the **height** in claims 3: 2-5nm; claim 9: 0.1-1nm; claim 10: 3-8nm; claim 11: maximum valley depth  $\leq 10\text{nm}$  and ratio  $H/D \leq 2$  in claim 8 see {¶ [0054], [0055] also as illustration Fig. 5}.

As regard *Bearing Ratio* of claims 4-7 in addition to other claimed properties superposed textures of claims 9 and 10: these ratios and irregularities on the textures, not measured in **Saito et al**, would at least have been inherent product in **Saito et al** given that the instant article is produced by the same process. This is evident by comparing instant Examples 2, 3, 11, and 17 with **Saito et al** example 1 and {¶ [0029], [0047]}.

As regards the claim 12 coercivity  $H_v/H_c$ : coercivity is a characteristic of substrate textures, as such this character would have merely been an inherent property of the textures taught in **Saito et al** {¶ [0034], [0077]}.

As regard the textures in claim 13,  $R_{\max}/R_a \leq 5$  cf  $R_{\max}$  and  $R_{p(\text{peak})}$  see {[0009], [0053], [0092], [0093] and  $R_a$  at [0045], [0037] (ranging from 0.1-1.5nm) meeting the ratios of these claims}.

Alternate to anticipation by **Saito et al**, optimizing the extent of textures or merely observing prior art texture ranges would at most be routine optimization for one of ordinary skill in the art. Merely eliminating or optimizing the extent of texturing - see {¶ [0007], [0084]} as general conditions for the product were known in the production process of **Saito et al**. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 180); *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235.

### ***Other References***

**Takahashi et al** (US 6537648) is cited as cumulative to **Hironao et al** and **Saito** teaching a disc glass substrate for a magnetic recording medium including ridge textures along concentric circles in a disc (col. 2 lns 66,67). The textures have a height 2-10nm and ratio  $R_{\max}/R_a \leq 15$  [col. 8 ln 66, 67; col. 15 ln 6-13; col. 16 lns 46-48; Fig. 6] measured to the (same) nano degree by Atomic Force Microscope 'AFM' measuring a smaller,  $5 \mu\text{m}^2$ , area [col. 15 ln 12, col. 16 lns 34,35; col. 16 ln 64].

**Mitani et al** (US 6576353) is cited as cumulative to **Hironao et al** and **Saito** teaching a disc glass substrate for a magnetic recording medium including ridge textures along concentric circles around a disc (col. 1 ln 12). The textures have a height 2-10nm (*also* claims 3: 2-5nm; claim 9: 0.1-1nm; claim 10: 3-8nm; claim 11: maximum valley depth  $\leq 10\text{nm}$ ) [col. 1 lns 57,58]; claims 8  $H/D \leq 2$  as maximum high variations from average roughness heights [0030]. The textures have a ratio  $R_{\max}/R_a \leq 15$  (corresponding ( $R_{\max}/R_a = 5\text{nm}/0.3\text{-}3.0\text{nm}$ )  $\leq 15$ ; *also* claim 13,  $R_{\max}/R_a \leq 5$ ) [col. 4 lns 57-67].

**Horie et al** (US 6491572) is cited as cumulative to **Hironao et al** and **Saito** teaching a disc glass substrate for a magnetic recording medium including ridge textures along concentric circles around a disc (col. 3 lns 8,9, 32,33). The textures in **Horie et al** have a height within 2-10nm (col. 5 lns 46,47; col. 5 lns 15, 45, 46, 67). The textures have a ratio  $R_{\max}/R_a \leq 15$  (col. 5 lns 15, 45, 46, 67 with Table 6 - teaching  $R_a$  at col. 6 lns 60-67). The instant article is produced by the same process as the product instantly claimed. This is evident from instant Examples 4, 10, 17, 18 and 19 with **Horie et al** [col. 2 ln 44, 65; col. 4 lns 38-53].

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### ***Conclusion***

The claims are 1 to 15.

- Restriction has been required.
- The claims under consideration are: 1 to 13.
- No claim has been allowed.
- Information Disclosure Statement has been received.

### **INQUIRES**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louis Falasco, PhD whose telephone number is (571)272-1507. The examiner can normally be reached on M-F 10:30 - 7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol D. Chaney, PhD can be reached at (571)272-1284. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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02/07



**CAROL CHANEY  
SUPERVISORY PATENT EXAMINER**